

WHAT IS CLAIMED IS:

1. A membrane filtration manifold for connecting a filter submodule comprising one or more elongate bundles of semipermeable polymeric fibers, said manifold comprising:
a housing; and
at least one submodule connecting collar connected with said housing, said collar being adapted to receive and locate said submodule having a connecting sleeve with a locking formation whereby the submodule can be secured at an end with the collar by a clip adapted to engage both said collar and said locking formation and at least in part surround both said collar and said locking formation to prevent axial withdrawal of said submodule from said collar.
2. A manifold according to Claim 1, wherein said housing is in fluid communication with said collar.
3. A manifold according to Claim 1, wherein said collar has an internal stepped seat for bearing engagement with said end of said submodule.
4. A manifold according to Claim 1 wherein said locking formation comprises a radially outwardly directed circumferential flange formed on said sleeve.
5. A manifold according to Claim 1 wherein said clip is cylindrical having a side wall split to define opposed wall edges, said side wall having a top and a bottom.
6. A manifold according to Claim 5, wherein said clip comprises a top radially inwardly directed circumferential flange adjacent the top of said side wall for bearing engagement with said radially outwardly directed flange formed on said sleeve.
7. A manifold according to Claim 5, wherein said side wall comprises a bottom radially inwardly directed circumferential flange at or adjacent the bottom of said side wall for bearing engagement with a complementary step on said collar.
8. A manifold according to Claim 6, wherein said clip comprises projections on said side wall adjacent respective said opposed edges.
9. A manifold according to Claim 8, wherein said projections extend longitudinally from said top flange.
10. A manifold according to Claim 6, wherein said top flange is partially circumferential.

11. A manifold according to Claim 1 wherein said clip is hingedly connectable to said collar.

12. A manifold according to Claim 1 wherein said clip is mutually interengageable with said collar.

13. A manifold according to Claim 1 wherein said clip is adapted for over-centered circumferential locking engagement with a said collar.

14. A manifold according to Claim 1 comprising four submodule connecting collars.

15. A manifold according to Claim 14, wherein said collars are disposed in a common plane and have parallel axes.

16. A manifold according to Claim 15, wherein one end of said housing is adjacent each collar and an axis of said housing is parallel to the axes of said collars.

17. A membrane filtration apparatus comprising:
a filter submodule comprising one or more elongate bundles of semipermeable polymeric fibers;

a headpiece removably connected at one end of said filter submodule; and

a basepiece removably connected to the other end of said filter submodule; and

at least one of said basepiece and said headpiece being a membrane filtration manifold for connecting said filter submodule, said manifold comprising:

a housing; and

at least one submodule connecting collar connected with said housing, said collar being adapted to receive and locate said submodule having a connecting sleeve with a locking formation whereby the submodule can be secured at one end with the collar by a clip adapted to engage both said collar and said locking formation and at least in part surround both said collar and said locking formation to prevent axial withdrawal of said submodule from said collar.

18. A membrane filtration apparatus according to Claim 17, wherein said basepiece is said membrane filtration manifold.

19. A membrane filtration apparatus according to Claim 17, wherein said headpiece is adapted for connection to a filtrate conduit allowing fluid communication

between said headpiece and said filtrate conduit and said basepiece is adapted for connection to a cleaning fluid conduit allowing fluid communication between said basepiece and said cleaning fluid conduit.

20. A membrane filtration apparatus according to Claim 19, wherein said collars are configured to allow placement of said cleaning fluid conduit at least partially between two pairs of said collars.

21. A membrane filtration apparatus according to Claim 17, wherein said basepiece comprises a removable cap for fluid-tight sealing engagement with an end of said housing.

22. A membrane filtration apparatus bank comprising:
a plurality of membrane filtration apparatuses, each membrane filtration apparatus comprising:

a filter submodule comprising one or more elongate bundles of semipermeable polymeric fibers;

a headpiece removably connected at one end of said filter submodule; and

a basepiece removably connected to the other end of said filter submodule;

at least one of said basepiece and said headpiece being a membrane filtration manifold, said manifold comprising a housing and at least one submodule connecting collar connected with said housing, said collar being adapted to receive and locate said submodule having a connecting sleeve with a locking formation whereby the submodule can be secured at one end with the collar by a clip adapted to engage both said collar and said locking formation and at least in part surround both said collar and said locking formation to prevent axial withdrawal of said submodule from said collar;

a filtrate conduit connected to at least one membrane filtration apparatus; and

a cleaning fluid conduit connected to at least one membrane filtration apparatus.

23. A membrane filtration apparatus bank according to Claim 22, wherein said membrane filtration apparatuses are arranged in an upright position, said filtrate conduit being proximally above said headpieces and said cleaning fluid conduit being proximally above said basepieces.

24. A membrane filtration apparatus bank according to Claim 23, wherein said cleaning fluid conduit is at least partially disposed between two pairs of submodule collars and is in fluid communication with said housing.

25. A membrane filtration apparatus bank according to Claim 22, wherein said cleaning fluid conduit is in fluid communication with said basepiece via an aperture in said cleaning fluid conduit to allow a cleaning fluid to pass from said cleaning fluid conduit to said submodules via said basepiece.

26. A membrane filtration apparatus bank according to Claim 22, wherein said housing is in fluid communication with said filtrate conduit.

27. A membrane filtration apparatus array comprising a plurality of membrane filtration apparatus banks according to Claim 22 connected in parallel by an array filtrate conduit.

28. A membrane filtration apparatus array according to Claim 27, wherein said array is adapted for insertion into an open feed tank.

29. A membrane filtration apparatus array train comprising:
a train conduit; and
a plurality of membrane filtration apparatus arrays according to Claim 27 connected in fluid communication with said train conduit.

30. A membrane filtration apparatus according to Claim 17, wherein said headpiece is said membrane filtration manifold.